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Abstract of the Disclosure

A mirror file system (MFS) is a virtual file system that links two or more file systems together and mirrors between them in real time. When the MFS receives updated data from an application, all file systems linked by the MFS are updated in real time. The file systems linked and mirrored through the mirror file system can be a local file system connected to a physical device, or a network file system exported by a remote system on a network. The real-time mirroring mechanism provided by the MFS is transparent to user applications. The system administrator first sets up the mirroring mechanism by linking a file system to another file system on a single directory through an MFS mounting protocol. These two file systems and their files are linked together and become a mirroring pair. Both copies are owned by, and under the management of, the MFS. All access to files or directories in both file system go through the MFS. The user applications perform normal file system operation and file/directory operation system calls like open, read, write and close functions from the pathname of either file system. Most of the file operations (such as a read operation) only need to go to one file system under the MFS to get the data. Only when updates occur, such as a write operation, the MFS mechanism ensures that all data updates go to both the file systems. With this mirroring mechanism of the MFS, the files/directories in one file system are mirrored to their mirroring counterparts of another file system in real time. With the MFS technology, a standalone system is able to make multiple copies of data available to the application. In the network environment, multiple servers owning the same data copy can be distributed on the network and mirror the data to each other in real time to provide more efficient and more reliable service to their clients.